

MISCELLANEOUS NOTES

REFERENCES

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- JEEVARATNAM, K. & RAJAPAKSE, R.H.S. (1981): Biology of *Helopeltis antonii* Sign. (Heteroptera: Miridae) in Sri Lanka. *ibid.* 6: 247-251.
- SMITH, E.S.C. (1977): Presence of a sex attractant pheromone in *Helopeltis clavifer* (Walker) (Heteroptera: Miridae). *J. Aust. ent. Soc.* 16: 113-116.

29. YOUNG LAC INSECTS IN A MINIATURE ANT'S NEST

Many insects live underground and so do most species of ants. A typical case would be of the common black ant, *Camponotus compressus*. On the contrary there are insects which build their nests in elevated areas or on tree tops. Such an insect would be the honey-bee. Then there is an ant which builds its nest on trees, and it is *Oecophyla smaragdina*. Prof. Doflein, who was Professor of Zoology, Freiburg University, Germany, before the First World War, as Zoologist, toured over Southern Asia, visiting Ceylon as well. Here he observed the ant *Oecophyla smaragdina* building its nest. Living on a tree with broad leaves, some ants tried to hold them close to one another while others glued them together with the secretion of their larvae otherwise destined to become silk-like thread for their cocoons when dried. Thus arose a nest formed of leaves with the size almost two-thirds of an ordinary football. Doflein was the first to illustrate such a nest and also to show the ants bringing separated leaves near each other for being woven into a nest. A subject of my study had been lac. While at Bangalore, I found that the local species, *Kerria mysorensis*, grows best on *Shorea talura*. This has broad leaves of the same size as that of the banyan. Besides the lac insect there was the ant *O. smaragdina*. It had constructed nests, some around the stems on which lac insects were found. Then there were other nests of which the leaves on the undersurface were infested with some scale-insects. Lac in-

sect is also a scale-insect so that the inhabitants of the ants' nests were all scale-insects. They secrete honey-dew which serves as the food of the ant. Thus in effect the ants' nest was like a dairy. There was also evidence to show that ants helped to transplant scale-insects on leaves and increase their number in the nest. The scale-insects then were treated like cows by the ants. As far as I remember Doflein does not mention whether the ants' nest which he observed was populated with scale-insects.

However, like the Asian species *O. smaragdina*, there is one in Africa named *O. longinoda*. E. O. Wilson, the American authority on ants, and Hoelldobler & Wilson (1981) have studied the African ant, which was rehabilitated in a greenhouse in America. Their illustrations confirm the main observations of Doflein. They do mention that the ants "gather the sweet honey dew, the excrement of scale insects". But there is no hint to the effect that the nest was found populated by scale-insects and it functioned like their dairy. This is because their observations refer to a rehabilitated ant colony and not the natural one in Africa.

Whereas the large nests of the two ants *Oecophyla smaragdina* and *O. longinoda* have been illustrated, a similar nest of a small ant remains unrecorded. Lac was cultivated in a small plantation near the village, Dorsanipalia, on the way to Banergatta in Bangalore. The tree was called "Jalari" in Kanarese, which would

be *Shorea talura*. The insect was a new species which has been named *Kerria mysorensis*. It gives three crops of lac per thirteen lunar months. In the above area I found the nest of a small ant. The nest was built of spores and residues of fungi growing on the leaves of *Shorea talura* infected with lac. The insects excrete honey-dew copiously and much of it falls on the leaves below where saprophytic fungi grow profusely upon it. The predominant fungus was *Aspergillus niger*. This accounted for the black appearance of the miniature ant's nest, shown almost natural size. The ant had so constructed the nest that there was one hole which was used as entrance and the other as exit. I was able to find another nest of the same ant in its earliest stage of construction. A portion of a twig was colonized by young lac insects soon after they had fixed themselves. Finding that there was a small colony of lac insects the ants came to construct a nest using

the saprophytic fungi as the building material. The motive of constructing the nest was the same as of the larger nest by the weaver ants

O. smaragdina and *O. longinoda*.

The species that built the nests, could not be ascertained, as, unfortunately this information was contained in a file which I had taken to Pabna, Bangladesh, and which was subsequently lost. Its nest is fully formed with two holes, as entrance and as exit, which suffice to speak of the ants' intelligence. The nest was also constructed in order to be sure of supply of honey-dew.

SUMMARY

Ants build nests to exploit scale-insects as a constant supply of honey-dew, as do two species of *Oecophyla*, Asiatic and African. A miniature ants' nest has been found covering a colony of young lac insects also as source of honey-dew.

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September 26, 1986.

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REFERENCE

HOELLDÖBLER, B. K. & WILSON, EDWARD O. (1981): Weaver Ants. In: H. Topoff, Animal Society and Evolution. Scientific American Publication.

30. RECORD OF *SIMA ALABORANUS* (WALKER), A HONEYDEW SCAVENGER ANT (HYMENOPTERA: FORMICIDAE: MYRMECINAE) KILLING APHIDOPHAGOUS SYRPHID MAGGOT IN WESTERN HIMALAYA

In nature, there exists a symbiotic association between plant lice and attending ants (Nixon 1951, Bodenheimer and Swirski 1957, Way 1963, Bradley and Hinks 1968) where the latter, to some extent provide protection to the aphid colony from predators (Bank 1959) and get nourished with sugar excreta of the

aphids. The experiments of El-Ziady and Kennedy (1956) indicated that *Aphis fabae* Scopoli multiplies more rapidly when attended by *Lasius niger* L. whether the aphid's enemies are present or not. Ants have never been found to kill aphid predators, although Capinera and Roltsch (1981) observed that